

CHELIDONURA INORNATA BABA AND
C. ELECTRA SP. NOV. FROM THE SOLOMON
ISLANDS (OPISTHOBRANCHIA, AGLAJIDAE)

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SUMMARY

The anatomy of *Chelidonura inornata* Baba (1949) and *C. electra* sp. nov. is described. Both specimens follow the normal aglajid pattern of alimentary canal, with muscular buccal bulb and distended crop. The posterior notum is extended into two unequal processes, typical of the genus. The specimens were collected at Guadalcanal, British Solomon Is., and have been recorded from Queensland and New South Wales, Australia.

INTRODUCTION

During the Royal Society Expedition to the Solomon Islands in 1965, three specimens of *Chelidonura* were collected by Mr. Ian Gower, a resident planter, and given to the leader of the marine party, Professor J. E. Morton. One of these, a dark, white-spotted animal, is *C. inornata* Baba, 1949. The other two specimens, white with gold margins, belong to a new species which is described below.

DESCRIPTIONS

Chelidonura inornata Baba, 1949

Fig. 1-2

Chelidonura inornata Baba, 1949: 22, 124, pl. 2, fig. 5.

Body elongate. Head-shield tapering posteriorly ending half-way down body. Visceral hump quite distinct from head region, beginning behind head-shield. The dorsum extends posteriorly to form a pair of unequal fleshy processes, the left slightly longer than the right. Parapodia broad and fleshy, folding over each other on the dorsal surface. Gill and mantle enclosed by posterior processes. Anterior end of head-shield tri-lobed. No sensory bristles or papillæ were observed in preserved animal although observed by Baba (1949). 6-7 large compound folds of Hancock's organ on each side of the head. Size of preserved animal approx. 6.5cm x 2.0cm.

Colour. Dorsal surface sepia black; outer surface of parapodia and foot black, flecked with white; very fine silvery margin continuous around parapodial edge. Inner surface of parapodia gray. Caudal lobes black. Anterior lateral lobes of the head-shield are opaque white, bordered by orange-red region; central lobe white.

Alimentary Canal. Follows typical pattern found in the Aglajidae (Rudman, 1968). A muscular buccal bulb, devoid of jaws or radula, leads into an extensible crop. The oesophagus leaves the crop and passes through the diaphragm to enter an ill-defined stomach region with many branches to the digestive gland. The intestine loops up and over the digestive gland, opening by the anus, into the reduced mantle cavity, just left of centre. Compared with *Aglaja cylindrica* (Cheeseman, 1881), and *Aglaja depicta* Renier, 1807 (Guiart, 1901) where the buccal bulb is half the length of the body, the buccal bulb of *C. inornata* is small,

being approximately one-fifth the body length. A massive oral gland lies under the buccal bulb and is equal in size to it.

Nervous System. Similar to that of other aglajids studied (Guiart, 1901; Rudman, 1968). Ganglia of nerve ring concentrated dorsally, the pedal commissure very long. Buccal ganglia placed posteriorly just below œsophageal opening. Hancock's organs are large, consisting of 6-7 compound vertical folds.

Reproductive System. This is probably also typical of the family. However the preservation of the one specimen available made it difficult to follow the ducts of the genital mass. The penis is very simple, being a conical, muscular sac with a deep seminal groove and no prostate gland. (Fig. 2)

When discussing this paper with Mr R. Burn he suggested that my description of the penis was incorrect. He kindly gave me some Australian specimens to study. In these specimens, which were one-third the size of the Solomon Is. specimen, the penis is very similar to that of the new species described below. After re-examining the specimen it is possible that the penis had suffered from bad preservation. It is very possible that my description and drawing of the penis of the Solomon Is. specimen is incorrect.

Shell. The specimens were preserved in formalin and the shell therefore disintegrated. By following the organic membrane that remained, the shell appears to be similar in shape to *C. evelinae* Marcus, 1955 or *C. phocae* Marcus, 1961, the long process reaching into the right posterior lobe of the dorsum.

DISCUSSION

This specimen is *Chelidonura inornata*, originally described from Japan. The colour of the type material was "glossy purplish-black, white dots on outer side of parapodia and posterior edge of head-shield, central anterior lobe white, two lateral lobes white with yellow borders." Burn (1966) notes *C. inornata* from Australia as having "blue spotting on parapodia and sole, black cephalic shield and visceral hump, and a white and yellow anterior margin to the head. Its penis being conical with a deep channel-like seminal groove."

Risbec (1928) describes a *Chelidonura* from New Caledonia as having a pair of "tentacles", the base of which were white, the extremities being chestnut yellow. The head was black with white border, parapodia gray inside, externally black with white spots. He identifies this as *C. obscura* (Bergh, 1901). Bergh's original description was unavailable, but Mr. R. Burn has kindly informed me that *C. obscura*, as described by Bergh, is "dark brown, with gill and sides of body greyish-white; margins of head-shield and foot dark". Also the penis has "two long horns of the prostate gland". Risbec has apparently misidentified his specimens.

Chelidonura electra sp. nov. Fig. 3-7

Body elongate. Head-shield tapering posteriorly, the bluntly triangular posterior end extending beyond the limits of the anterior cavity and forming an unattached flap. Behind the flap, the visceral hump rises from the foot. A pair of lobes extend from posterior end of visceral hump, left being long and fleshy, about as long as the body, right lobe half this length.



Figures 1 - 2. *Chelidonura inornata* Baba 1, animal (from field sketch of living animal by J. E. Morton). 2, penis, opened.

Figures 3 - 7. *Chelidonura electra* n.sp. 3, animal (from field sketch of living animal by J. E. Morton). 4, preserved animal showing typical chelidonuran separation of visceral hump and anterior body cavity. 5, penis. 6, vental view of penial papilla. 7, penis, opened to show penial papilla, seminal groove, and part of prostate gland. (Broken lines denote external seminal groove).

Parapodia large and fleshy, folding over the dorsum. Gill large almost completely enclosed by posterior processes. Hancock's organ a region of 10 distinct compound folds behind which is an area of indistinct folding. Organ large, on right side running vertically from seminal groove to dorsal flap of head-shield. Eyes, small and black, situated on each side of centre line close to anterior edge of head-shield. No sensory processes observed on anterior edge of head.

Colour. Animal translucent white; margins of parapodia, posterior lobes and anterior corner margins of head, being bright lemon-yellow.

Alimentary Canal. Similar to that of *Chelidonura inornata*, buccal bulb relatively small. Oral gland-mass massive, situated below buccal bulb. Crop small.

Nervous System. Similar to that of *C. inornata*. A description of this system will form part of a comparative study of the Bullomorpha to be published later. Nerve-ring ganglia dorsally placed, buccal ganglia placed posteriorly below the oesophageal opening. Eyes small, on either side of midline, very near anterior border of head. Hancock's organs comparatively large. No development of anterior sensory processes observed.

Reproductive System. Genital mass similar to the normal pattern of the Aglajidæ (Rudman, 1968). Penis unlike any as yet described in this genus. It opens just to the right of the mouth, leading into a thin-walled vestibule on the floor of which runs a deep seminal groove. This groove passes into a muscular sac enclosing the prostate gland. At the posterior end of the vestibule a penial papilla is attached, the lateral edges of which fold under to form a ventral groove running to the end of the papilla. Posteriorly the groove is continuous with the opening of the seminal groove into the prostate region, enabling passage of sperm in both directions (Fig. 5-7). The penis complex lies alongside the buccal bulb, and is of similar length. *Chelidonura evelinae* has a similar type of penis but lacks a penial papilla (Marcus, 1955).

Shell. The preservation of the material destroyed the shell. The organic matrix remaining suggests that the long process on the shell, typical of this genus, is not as pronounced as in *C. evelinae* or *C. velutina* Bergh, 1905.

Material. The holotype is deposited in the British Museum (Natural History), London, No. 196951. Size of holotype: 5.0cm x 1.5cm.

A microscope slide of the organic matrix of the shell of a second specimen and the dissected animal of this specimen are also deposited at the British Museum. Size of second specimen: 7.0cm x 1.7cm.

Both specimens were collected along with *C. inornata* on a small brown coral (*Porites* sp.) in a lagoon at Paruru, Marau Sound, Guadacanal, Solomon Islands, in 25 feet of water by Mr. Ian Gower.

DISCUSSION

This species is named after the Greek goddess Electra, "the bright or brilliant one", daughter of Oceanus and Tethys. This species has been found in eastern Australia. Allan states, "I have seen a very lovely little pure white tailed-slug with yellow bordering collected in the vicinity of Clarence River Heads (northern New South Wales), but this appears to be unnamed at present" (Allan, 1959). It has also been collected at Orpheus and Hook Islands in Queensland (R. Burn, pers. comm.). A species of *Chelidonura*, *C. pallida*, described from one specimen from New Caledonia, (Risbec, 1951) is similar in colour. The animal is white and the borders of the parapodia and posterior lobes are coloured "orange et liseres d'une fine ligne noire". In the same description, while comparing his specimen with *C. amoena* Bergh, 1905 Risbec states that "bordures

Chelidonura from Solomon Islands

jaune vif et noir". The important colour difference therefore, between *C. pallida* and *C. electra* is the possession of a black line in the former case. Neither animal from the Solomon Is. had any black markings and Allan mentions no black in her Australian observation. Unfortunately, anatomical differences are difficult to determine, the reproductive system and penis of *C. pallida* not being described. In *C. pallida*, Risbec describes a pair of oral glands, one on each side of the buccal bulb, which appears to be greater in size, relative to body-length, than in *C. electra*. A large ventral oral gland is present in *C. electra*.

The parapodia in Risbec's drawing of the live animal of *C. pallida* suggest that they may not be as large as those of *C. electra*. One other colour difference is the lack of yellow markings on the dorsal edge of each side of the anterior of the head shield in *C. pallida*. The differences are admittedly slight, and knowing the colour variation that can occur, the author had some hesitation in describing these animals as a new species. However, although there are intraspecific colour differences in the genus, these are usually differences in marking patterns rather than in presence or absence of a colour. I know of four pure white aglajids; *A. dubia* O'Donoghue, 1929, *A. lorrainae* Rudman, 1968, *A. seurati* (Vayssi re, 1926) and *A. virgo* Rudman, 1968, and a number of black species differing only in colour markings, *C. hirundinina* (Quoy and Gaimard, 1832), *C. obscura* (Bergh, 1901), *A. splendida* Risbec, 1951, and *A. ocelligera* (Bergh, 1894).

C. electra and *C. pallida* may prove to be colour variations, but until further observations of the two forms are recorded, I feel justified in distinguishing the Solomon Is. specimens as a distinct species.

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